Catalogue of American Amphibians and Reptiles.

Smith, H.M., J.A. Lemos-Espinal, and D. Chiszar. 2006. *Procinura, P. aemula.*

Procinura Cope
Filetailed Snake

Procinura Cope 1879:262. Type species *Procinura aemula* Cope 1879, by monotypy.

• **CONTENT**. *Procinura* is monotypic.

• **DEFINITION**. *Procinura* is a small species of snake with a maximum total length of 447 mm in females, 373 mm in males. The tail length/total length ratio is 0.13–0.15 in females, 0.16–0.22 in males. The scale rows are usually 15–15–15, but the posterior rows are sometimes 16 or 17 (36% of specimens). All scales of the tail except the subcaudals are keeled, the keels ending in a spur. Keels extend forward on the body only on the median 9 scale rows to a distance no more than 2.5 tail lengths. The rest of the dorsals are smooth. The ventrals are 141–156 (mean = 149), 91%>149 in females, 30% in males. The subcaudals are 34–45 (mean = 38), 8%>37 in females, 100% in males. The dorsal head scales are normal in number and size; the supralabials are usually 7 (14% of specimens have 8); the infralabials are nearly as equally 7 as 8. The preoculars are single, and the loreal is also single with rare exceptions. Two postoculars are present, and the temporals are 1–2 on each side. The posterior chinshields are separated, half or less the size of the anterior chinshields, and in contact with a single (4th) infralabial.

The pattern is tricolored at least on the head and neck, with or without triads on body and/or tail; the snout is usually pale, but otherwise the top of the head is black, followed by a yellow, then a black band, each 2–3 scales in length. The rest of the body and tail is basically red, with 0–11 triads of black and yellow of varied arrangement on the body, 0–3 on the tail.

• **DIAGNOSIS**. The combination of small size, red body usually with black and yellow rings, and strongly keeled scales on the tail and rear part of the otherwise smooth–scaled body, is diagnostic.

• **ILLUSTRATIONS, DISTRIBUTION, FOSSIL RECORD, and PERTINENT LITERATURE.** See species account.

• **ETYMOLOGY**. The generic name was derived from the Greek word "ουρα" (tail) and the Latin word "procinctus" (armored), and refers to the heavy keels on the tail, which Cope assumed functioned in burrowing. It is quite likely, however, that the spines and keels on the tail function to deter predation, as indicated by behavior. When startled, if the snake does not flee, it coils and hides the head, exposing the tail with its apparently deterrent structure.

Procinura aemula Cope
Filetailed Snake

Procinura æmula Cope 1879:262. Type-locality, "Batopilas, Chihuahua", Mexico. Holotype, Academy of Natural Sciences of Philadelphia (ANSP) 11641, an adult male, collected by E. Wilkinson at some time between 1873 and 1875.
Contia aemula: Garman 1884b:92.
Scolecophis aemulus: Cope 1900:1109.
Scolecophis aemulae: Gadow 1905:225. *Lapsus.*
Sonora aemula: Bogert and Oliver 1945:371.
Procinura aenula: Maldonado-Koerdel 1953:124. *Lapsus.*

• **CONTENT**. No subspecies have been proposed.

• **DEFINITION and DIAGNOSIS.** See generic account.



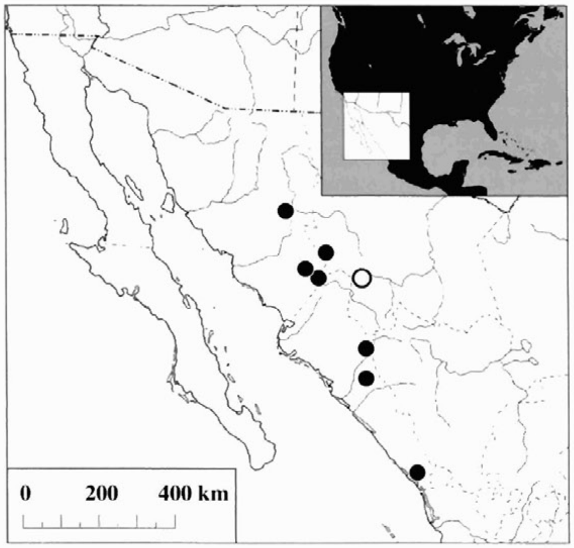
Figure 1. *Procinura aemula*, Batopilas, Chihuahua. Photo by J.A. Lemos-Espinal.

• **DESCRIPTIONS**. Notable descriptions are in Cope (1879, 1900), Garman (1884b), Günther (1895), Boulenger (1896), Bogert and Oliver (1945), Zweifel and Norris (1955), Webb (1960), Nickerson and Heringhi (1966), Hardy and McDiarmid (1969), McDiarmid et al. (1976), Hale (1990), and Lemos-Espinal et al. (2004b).

• **ILLUSTRATIONS**. Bogert and Oliver (1945) published excellent drawings of the head and maxilla of a specimen from Guirocoba, Sonora. Color photographs are in Leetz (1983), Coburn (1991), Campbell and Lamar (2004), Lemos-Espinal et al. (2004b), and Van Devender and Ferguson (2004). A drawing of the hemipenis is in Cope (1895, 1900).

• **DISTRIBUTION**. *Procinura aemula* is distributed in humid and semiarid semitropical and tropical forests at 50–750 m in southeastern Sonora as far north as the Tónichi-Yécora transect (Nevares and Parra-Salazar 1991, Van Devender and Ferguson 2004), and southward through southwestern Chihuahua to southern Sinaloa as far south as 65 km S Mazatlán.

• **FOSSIL RECORD.** None.



Map. Locality records for *Procinura aemula*. The circle indicates the type-locality.

• PERTINENT LITERATURE. Information in the literature, other than that previously cited, may be summarized as follows: **anatomy and physiology** (Bogert and Oliver 1945, Cope 1879, 1895, 1900, Greene 1997, Ocaranza 1930, Phisalix 1922, and Schwaner and Dessauer 1982); **behavior** (Echternacht 1973, Goin and Goin 1962, Greene 1988, 1997, Hecht and Marien 1956, and Mertens 1956); **checklists and similar compendia** (Amaral 1929, Casas-Andreu and McCoy 1979, Cope 1885, 1886, 1887, 1896, Flores-Villela and Gérez-Fernández 1988, 1994, Frank and Ramus 1995, Gadow 1905, 1911, Garman 1884a, Lemos-Espinal et al. 2004c, Liner 1994, Maldonado-Koerdell 1953, Malnate 1971, Smith 1987, Smith and Smith 1976, 1993, Smith and Taylor 1945, 1950, Sokolov 1988, Wallach 1988, Werner 1925, and Williams and Wallach 1989); **diet** (Hardy and McDiarmid 1969); **ecology and distribution** (Flores-Villela 1993, Flores-Villela and Gérez-Fernández 1988, 1994, Lemos-Espinal et al. 2004a, Nevarres and Parra 1991, Smith et al. 2005, and Webb 1984); **herpetoculture** (Coburn 1991, Markel 1989, Obst et al. 1988, Slavens 1980, 1984, 1985, 1987, 1988, 1989, and Slavens and Slavens (1990); **phylogeny and systematics** (Bogert and Oliver 1945, Frost 1983, Lemos-Espinal et al. 2004a,b, Stickel 1943, and Williams and Wallach 1989); **reproduction** (Goldberg 2003, Hawkins 1999, and Zweifel and Norris 1955).

• REMARKS. Although originally described from Chihuahua, the species was not again recorded from the state until 2004 (Lemos-Espinal et al. 2004a), although by then it had been recorded several times in the adjacent states of Sonora and Sinaloa. The rediscovery was at the type locality, and as yet it is known only from four closely associated localities in the state. Only a single specimen had been reported before 1945. It is now regarded as relatively common in southwestern Chihuahua and adjacent Sonora.

The strange spurs on the tail are not known to occur in any other species of American snake but, as pointed out by Greene (1997), they are present in another species of burrowing snake, *Aspidelaps scutatus*, of southern Africa.

• ETYMOLOGY. The specific name is from the Latin word "aemulor" (emulation). Cope (1879) remarked on the extensive similarity of pattern to that of "*Elaps fulvius*." The sympatric coral snakes, *Micruroides euryxanthus australis* and *Micrurus d. distans*, do have patterns similar to that of most *P. aemula* (Roze 1996).

• COMMENT. The species was originally described in the monotypic genus *Procinura*, and it was so accepted until 1945, when Bogert and Oliver argued that it was insufficiently distinct from its close relative *Sonora* to merit separation from it. Stickel (1943), long a specialist in the systematics of *Sonora*, had recognized the close relationship of the two taxa, but still accepted *Procinura* as valid on the bases of the keels and spines on the caudal scales, and the pattern "developed along a different line than that seen in any described form of *Sonora*." Lemos-Espinal et al. (2004b) revived *Procinura* on the same grounds; the blunt tail scale and different habits and behavior (see **Etymology**) support the distinction. The generic name *Procinura* has been used at least 16 times in the literature from 1945 to 2004.

• ACKNOWLEDGMENTS. Dr. E.A. Liner kindly provided some recent references pertinent to *Procinura*. JLE was supported by grants from DGAPA-PASPA and CONABIO in the field and during his sabbatical leave; the University of Colorado, through the Department of Environmental and Evolutionary Biology, provided support for him during his stay there, as well as to HMS. We are very grateful to the editor, Dr. L.D. Wilson, for his thorough improvement of the account.

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